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FACTORS RELATED TO HUNTING AND FISHING PARTICIPATION IN THE UNITED STATES

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PHASE V: FINAL REPORT

COMPLETED

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KIRA C. YOUNG

RESPONSIVE MANAGEMENT
WESTERN ASSOCIATION OF FISH AND WILDLIFE AGENCIES

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Phase V: Final Report

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Chapter I • Introduction

This report summarizes the major findings and implications of a three-year study on the factors related to hunting and fishing participation in the United States. There were five phases to the project: 1) a comprehensive literature review, 2) a series of eight focus groups with active hunters, inactive hunters, and non-hunters, and a series of five focus groups with active and inactive anglers, 3) a multivariate analysis comparing screener data from the 1980, 1985 and 1991 National Survey of Fishing, Hunting and Wildlife-Associated Recreation, 4) a nationwide telephone survey of the general population, active hunters, inactive hunters, and active anglers and inactive anglers, and 5) this final report summarizing the results and implications of the study. A complete methodology for all phases is presented in Appendix A of this report.

Study results are reported through a five-volume series of publications available through the Fish and Wildlife Reference Service[1]: the literature review (Phase I), the hunting focus groups report (Phase II), the fishing focus groups report (Phase III), telephone survey results and multivariate analysis report (Phase IV), and this final report (Phase V).

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[1] Fish and Wildlife Reference Service, 5430 Grosvenor Lane, Suite 110, Bethesda, Maryland 20814-2158; (800) 582-3421

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The cover of the *Factors Related to Hunting and Fishing Participation* report series was designed and illustrated by Clark Frazier, and was completed only days before his untimely death. Clark was one of the most able, precise and creative wildlife artists I have ever known. His work, like his life, enriched those who came in contact with it. This research has been dedicated to Clark Frazier, wildlife artist, naturalist and friend.

Chapter II • Major Findings

Hunting Participation

- **Hunting is an important and traditional recreational activity for millions of Americans.**

Each year 14 million Americans 16 years-old and older hunt (Phase I). Every two years, 18% of Americans over the age of 18 hunt (Phase IVa).

- **Participation in hunting as a percentage of the U.S. population has remained stable between 1980 and 1990.**

In 1980, 10.2% of the population hunted. In 1985, 9% hunted and in 1990, 9.3% hunted (Phase IVb).

- **The relative stability in the percentage of Americans that hunt masks a very important interaction by gender. Hunting among American males is decreasing while hunting participation among American females is increasing.**

The percentage of males who reported hunting in the screener survey of the National Survey of Hunting, Fishing and Wildlife-Associated Recreation declined between 1980 and 1990 from

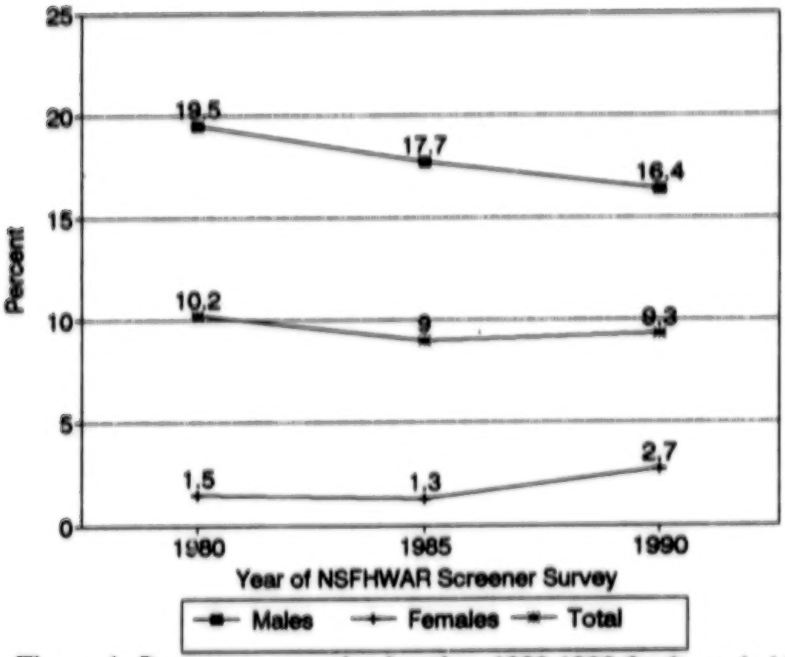

Figure 1. Percentage reporting **hunting** 1980-1990 for household members 16 and older from the screener portion of the National Survey of Fishing, Hunting and Wildlife-Associated Recreation

19.5% to 16.4%; a 16% decline off the 19.5% base. However, the percentage of females that hunted more than doubled between 1985 to 1990 from 1.3% to 2.7% (Phase IVb).

- **For males, the largest effect on hunting participation is associated with growing up in rural areas. Age is the second biggest influence on hunting participation among males.**

The largest effect on hunting participation for males is associated with growing up in rural areas. This was positively associated with hunting. However, fewer people are growing up in rural areas. When small towns were excluded from the multivariate analysis (Phase IVb), the decline was from 25% to 20% from 1980

to 1990. Age is the second biggest influence on decline in male hunting. As the population ages, there are fewer male hunters within that population. Minority race-ethnicity has a negative effect. White men (and women) are more likely to hunt. However in Phase IVb, the proportion of white men in the survey declined.

Only two factors are acting to offset the decline among hunting participation among males. Income is increasing and male hunters have higher incomes. The proportion of the male population in the Mountain region is increasing and a higher proportion in that region hunt (Phase IVb).

- **The increase in participation in hunting among females is due to social changes.**

Socioeconomic variables had almost no effect on hunting participation among females over the 10-year period analyzed in the multivariate analysis. The largest effect was the decline associated with age (Phase IVb).

Fishing Participation

- **Fishing is an important and traditional recreational activity for millions of Americans.**

Each year 36 million Americans 16 years-old and older fish (Phase I). Every two-years, 45% of Americans over the age of 18 fish (Phase IVa).

- **Participation in fishing as a percentage of the U.S. population has increased slightly between 1980 and 1990.**

In 1980, 26% of the population fished. In 1985, 25.7% fished and in 1990, 27.4% fished (Phase IVb).

- **The slight increase in the percentage of Americans that fish masks a very important interaction by gender. Fishing among American males has remained stable while fishing participation among American females is increasing.**

The percentage of males who reported fishing in the screener survey of the National Survey of Hunting, Fishing and Wildlife-Associated Recreation remained stable between 1980 and 1990. In 1980, 37.6% of males fished. In 1985, 37.1% fished and in 1990, 37.7% fished. The percentage of females fishing from 1980 to 1990 increased from 15.0% to 17.7%, or an 18% increase off a base of 15.0% (Phase IVb).

- **The largest determinants of male fishing decline in the U.S. are increasing age, fewer men growing up in rural areas**

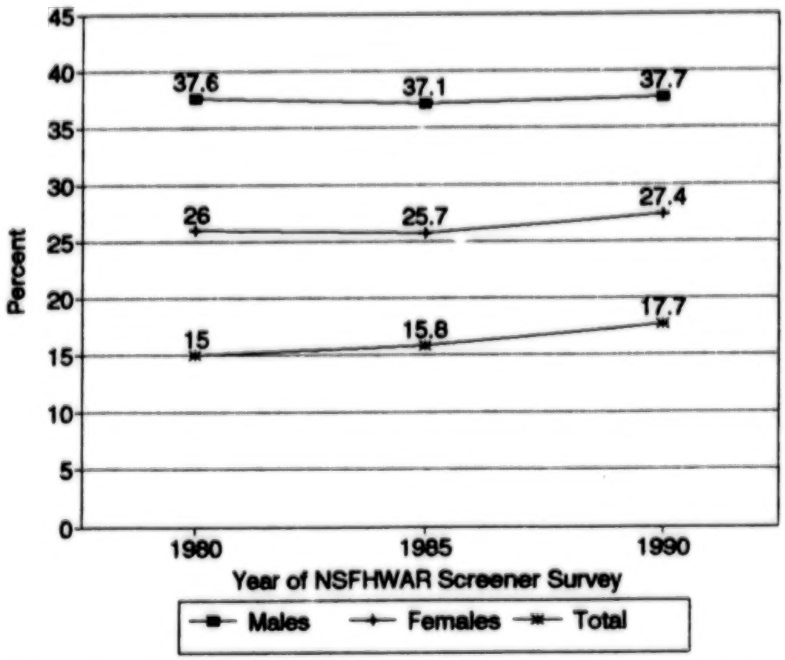

Figure 2. Percentage of screener reports fishing 1980-1990 for household members 16 and older from National Survey of Fishing, Hunting and Wildlife Recreation

and a decreasing proportion of white males.

The factors influencing a decrease are offset by increasing income and more men living on the southern coasts (primarily Florida and California) (Phase IVb).

- **Age, education, and urban socialization all tend to reduce female participation in fishing.**

Based on the results of the multivariate analysis, there appears to be a strong role of social factors outside demographic variables on increased participation of female anglers from 1980-1990. Although there was an overall increase in female fishing participation from 1980 to 1990, age, education, and urban socialization slightly affected female fishing participation rates negatively.

Public Opinion on Hunting

- **Most Americans support legal hunting.**

Almost three quarters of Americans approved of legal hunting. Forty percent of Americans strongly approved and 33% moderately approved of legal hunting. Eleven percent moderately disapproved and 11% strongly disapproved of legal hunting; a total of 22% disapproved. Five percent did not know or had no opinion (Phase IVa).

- **Most Americans believe hunting should remain legal.**

Eighty-one percent of Americans agreed that hunting should continue to be legal. Fifty-three percent strongly agreed, 28% moderately agreed, 3% neither agreed nor disagreed, 6% moderately disagreed and 10% strongly disagreed (Phase IVa). The survey results from this study match closely the results of a survey conducted by USA Today in 1992 where 80% of

Americans felt hunting should remain legal while 17% said hunting should be illegal (Phase I).

- **Although the American public supports legal hunting in general, the level of support or opposition varies based on the expressed reason for hunting.**

The majority of Americans support legal hunting (in general), as well as hunting for food, and hunting for food and recreation. However, opposition increases toward hunting only for recreation, and hunting for a trophy (Phase I).

- **Although the American public supports legal hunting as an activity, the public has concerns over hunter behavior. A majority of Americans feel that a lot of hunters violate hunting laws or practice unsafe behavior while hunting. Moreover the American public feels that when a hunter violates a hunting law, the hunter knows the law, but violates it anyway. Alcohol is considered a problem. Half of the American population believes a lot to a moderate number of hunters drink alcohol while hunting.**

Rohlfing (1978:408) has noted that "...the public has no axe to grind to lop off hunting, but sure feels differently about the hunter...no amount of advertising to the general public could work to change these beliefs unless some fundamental changes were made in the preparation of hunters and in the ethical manner in which hunters conduct themselves."

A majority (62%) of Americans agreed that a lot of hunters violate hunting laws or practice unsafe behavior while hunting. Thirty-five percent of Americans strongly agreed that a lot of hunters violate hunting laws or practice unsafe behavior while hunting, 26% moderately agreed, 12% neither agreed nor disagreed, 17% moderately disagreed and 10% strongly disagreed (Phase IVa).

Active hunters were split on this issue with almost half agreeing

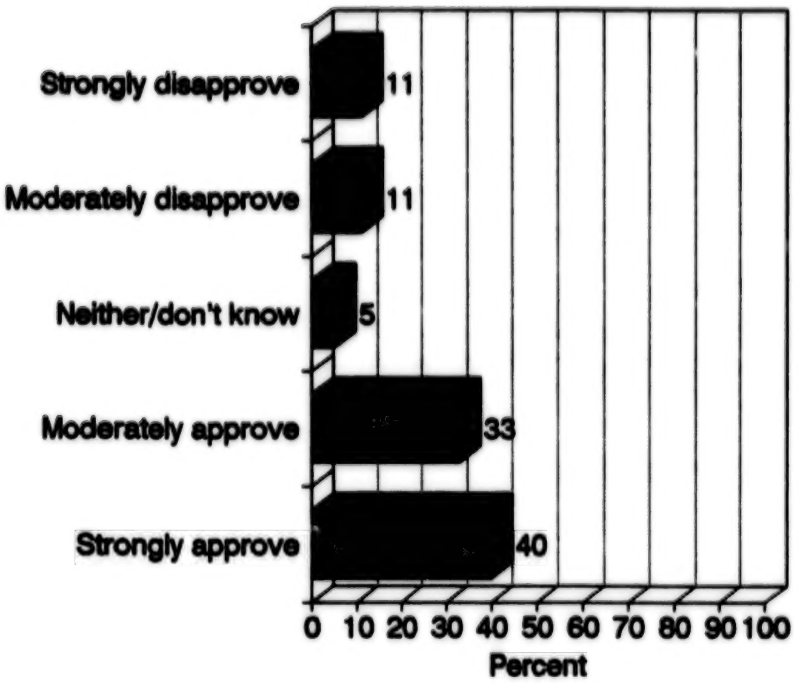

Figure 3. Adult Americans were asked, "In general, do you approve or disapprove of legal hunting?" (n=2085)(Phase IV)

and the other half disagreeing that a lot of hunters violate hunting laws or practice unsafe behavior while hunting: 23% strongly agreed, 26% moderately agreed, 5% neither agreed nor disagreed, 26% moderately disagreed and 21% strongly disagreed (Phase IVa).

When asked, "In general, when a hunter violates a hunting law is it because the hunter does not know what the law is or do you feel the hunter knows what the law is but violates it anyway?" 74% of the public felt that the hunter knows the laws, but violates them

anyway. Sixteen percent of the public felt that hunters break laws was because hunters do not know what the laws are (Phase IVa).

Drinking alcohol is considered to be a problem. Respondents were asked specifically if they thought a lot, a moderate amount, a few, or no hunters drink alcohol while hunting. Twenty-five percent of Americans felt that a lot of hunters drink alcohol while hunting, and 25% felt a moderate amount of hunters drink alcohol while hunting. Thirty-two percent stated a few hunters drink alcohol while hunting and 3% stated no hunters drink alcohol while hunting (16% had no opinion or did not know) (Phase IVa).

- **Concerns over illegal and unethical hunter behavior coupled with the perception that hunting is inherently unsafe are the primary reasons many Americans believe hunting is an unsafe activity and why the majority of the public strongly favors mandatory hunter education.**

Eighty-nine percent of active hunters and 93% of nonhunters agreed that all new hunters should be required to pass a hunter education course before they hunt. Eighty-two percent of nonhunters and 50% of active hunters felt that all current hunters should be required to pass hunter education refresher courses (Phase IVa).

In the telephone survey, almost 40% of the general population felt that hunting is an unsafe recreational activity (Phase IVa). Safety was a concern for active hunters, ex-hunters and nonhunters in the focus groups (Phase II). The use of firearms with the intent to kill is seen as making hunting unsafe as compared to activities which do not involve such behavior. An issue that was often raised by participants of focus groups was that of hunter carelessness, specifically hunters and drinking.

> *There is the issue of safety. People should have to go to a hunter safety course. Some people (do), but put blinders on (when they hunt). (Ex-Hunter, CA)*
>
> *My dad loved to hunt deer. My brother loves to hunt deer.*

My uncle was killed by a deer hunter. (Non-Hunter, CA)

(I would stop hunting if I had) an accident, if I shot one of my friends, any kind of an accident. (Hunter, PA)

You don't go out of the house during the hunting season or you'll be shot... You could wear orange with a neon sign and you'll still get shot. (Non-Hunter, NH)

I think of hunting and drinking. There is a bunch of that. (Ex-Hunter, CA)

I got worried about being shot. I have 10 reasons why I don't hunt anymore and safety is one of them. (Ex-Hunter, PA)

Get all the drunks and crazies out of the woods. I have been shot at and it's a humiliating experience. I got away from the group of friends who hunted and I went in the service. But there are a lot of crazies out there -- out-of-state hunters -- it's scary. (Ex-Hunter, NH)

I've stopped dove hunting because of crowding. I don't like shot raining down on my head. (Hunter, AZ)

I never really hunted anyway. I just went about 10 times right after I (got) out of the service. I just stopped (because) I didn't want to get shot. I wouldn't go again. (Hunting) is o.k., I just don't want to go. I go in the woods in the summer when there are no hunters. (Ex-Hunter, NH)

Public Opinion on Fishing

- **Almost all Americans support legal fishing.**

Ninety-five percent of Americans approved of legal fishing. Sixty-five percent of Americans strongly approved and 30% moderately approved of legal, recreational fishing. Two percent moderately disapproved and 1% strongly disapproved of legal, recreational fishing (3% total disapprove) (Phase IVa).

- **Most Americans believe fishing should remain legal.**

Ninety-six percent of Americans strongly or moderately agreed that

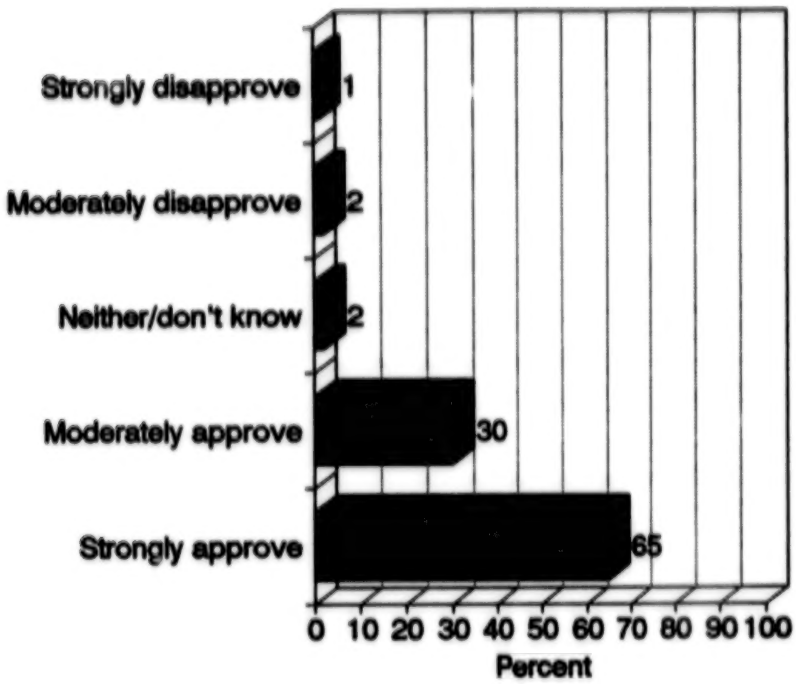

Figure 4. Adult Americans were asked, "In general, do you approve or disapprove of legal fishing?" (n=2085)(Phase IV)

fishing should remain legal. Seventy-three percent strongly agreed, 23% moderately agreed, 1% neither agreed nor disagreed, 2% moderately disagreed and 1% strongly disagreed with the statement, "Fishing should continue to be a legal activity" (Phase IVa).

- **Most Americans agreed that fishing is a safe recreational activity.**

Seventy-two percent of Americans strongly agreed, 25% moderately agreed (total of 96% agreed), 1% neither agreed nor disagreed, 2% moderately disagreed and 1% strongly disagreed (total of 3% disagreed) with the statement, "In general, fishing is a safe recreational activity" (Phase IVa).

- **Over a third of Americans believe that a lot of fisherman violate fishing laws and that these laws are broken consciously. Fishing over the creel limit and catching under-sized fish are considered the major offenses.**

The American public was split on the issue of angler compliance with regulations; 40% of the general population agreed while 39% disagreed that a lot of fisherman violate fishing laws. Seventeen percent strongly agreed that a lot of fisherman violate fishing laws, 23% moderately agreed, 21% neither agreed nor disagreed, 26% moderately disagreed and 13% strongly disagreed. Among active anglers, 18% strongly agreed that a lot of fisherman violate fishing laws, 24% moderately agreed, 11% neither agreed nor disagreed or did not know, 30% moderately disagreed and 17% strongly disagreed. Of the people who agreed that a lot of fisherman violate fishing laws, 41% stated fishing over the creel limits, 27% said catching under-sized fish, 15% said fishing without a license, 12% said drinking alcohol, 10% said catching fish out-of-season and 6% said fishing in restricted areas were the laws violated most often.

When asked, "In general, when an angler violates a fishing law is it because the angler does not know what the law is or do you feel the angler knows what the law is but violates it anyway?" 64% felt that the angler knows the laws, but violates them anyway. Twenty-four percent responded that anglers break laws because anglers do not know what the laws are. Twelve percent did not know.

Hunting Initiation

"A child is not usually brought on a hunt to fill idle hours, but rather when a parent, close relative, or other responsible adult is willing to act in the role of teacher and, not incidentally, transmitter of the hunting culture. It is perhaps not only this intimate interaction with an older hunting companion that causes

hunting to persist into adult life, but also the unique implied rite of passage..."

- O'Leary et al. 1987:231

"...a very important determinant of the number of new hunters in any state is the number of active hunters in that state. However, when recruitment was measured as a percentage of the population of a given state, the differences between states were dramatic. Recruitment, in this sense, was found to be a function of the percent of active hunters in the state. Variables that were negatively correlated with recruitment were primarily related to the urban character of a state...Management variables such as monies spent by the state on wildlife management, the number of game birds stocked, and hunter success rates, had little relationship to hunter recruitment or desertion rates. The relationship between hunting license costs and recruitment was not strong..."

- Applegate et al. 1984:61-65

- **It takes a hunter to make a hunter.**

Almost all hunters are initiated into hunting before the age of 20, usually by the father or other father-figure, in a rural environment. Hunters who are initiated in this manner hunt more frequently and are more likely to hunt avidly throughout their lifetime. The presence of other family members that hunt, amount of exposure to hunting and the presence of the "hunting culture" are of utmost importance in hunting initiation. Rarely does hunting initiation occur outside these parameters (Phases I and II).

Fishing Initiation

"I lost my tackle box because (my husband) gave it to my son. I guess I'm out of the picture. My son is only 4. He keeps saying he wants to go fishing with dad. Hopefully I can send them both off fishing and I will get some peace and quiet. (However) I would

not miss his first fishing experience."

- Inactive angler focus group participant, Florida

- **Fishing participation among youth in the U.S. is an extensive and pervasive recreational activity.**

Over 80% of Americans fished at least once as a child (Phase IVa). Most anglers were introduced to the activity by their father (Phases I, III and IVa). The issues of family surrounding fishing initiation are strong and pervasive, and any understanding of fishing activity must begin within the context of childhood memories and initiation (Phase III).

I have a family now and I just watch my daughter playing with her pole. I look at it now like my parents looked at it when they watched my brother and me. (Angler, MT)

I fished a lot with my Dad when I was growing up and now I fish when I see my Dad. (Ex-Angler, WA)

I'm married to a fisherman. My dad was a fisherman and my 2 brothers liked to fish and so when I got married I started fishing with my husband. Now I am the mother of a teenage daughter who doesn't drive yet, so my fishing days have kind of ended. (Ex-Angler, FL)

I used to like fishing because my dad would take me. I would only catch the little ones, but I loved the experience of it. (Ex-Angler, FL)

Hunting Satisfaction

"The importance of being in the outdoors was more influential than harvest success at determining satisfaction with the deer hunting experience. These findings imply that successful deer management programs must be concerned with multiple outdoor benefit of deer hunting environments and not just wildlife population parameters, per se."

- Hammitt et al. (1990:335-336)

"I never realized how the wind sounds, the rain, different smells, until I started hunting. Now I can give that to my son."
- Active hunter focus group participant, Pennsylvania

- **Hunting satisfaction is high among U.S. hunters. Almost all active hunters are either very or somewhat satisfied with their hunting experiences during the past two years.**

Active hunters were asked, "Overall, how satisfied were you with your hunting experiences over the past 2 years?" Fifty-one percent were very satisfied, 33% were somewhat satisfied, 2% were neither satisfied nor dissatisfied or did not know, 10% were somewhat dissatisfied and 5% were very dissatisfied (Phase IVa).

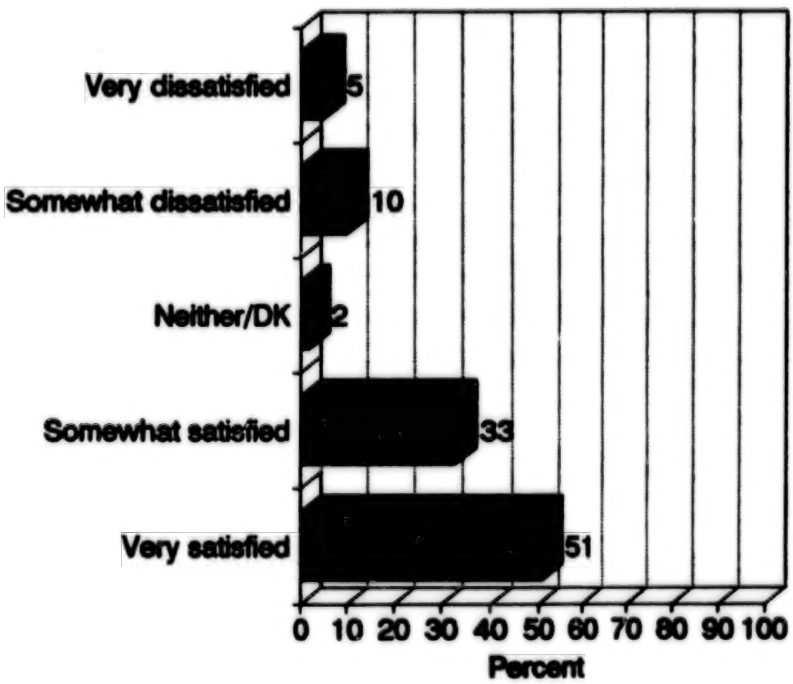

Figure 5. Active hunters were asked, "In the past two years, how satisfied were you with your hunting experiences?" (n=376)(Phase IV)

- **Active hunters are satisfied with their state fish and wildlife agency's efforts to provide hunting opportunities.**

Active hunters were very favorable when rating their state fish and wildlife agency's efforts to provide hunting opportunities. Among active hunters, 24% stated excellent, 46% stated good, 21% said fair, 5% said poor, while 4% did not know or had no opinion of their state fish and wildlife agency's efforts to providing hunting opportunities. (Phase IVa).

- **Hunters hunt for a variety of reasons. Most hunters hunt primarily for the sport/recreation or for meat. The percentage of hunters hunting for the meat is decreasing while the percentage of hunters hunting to be close to nature is increasing.**

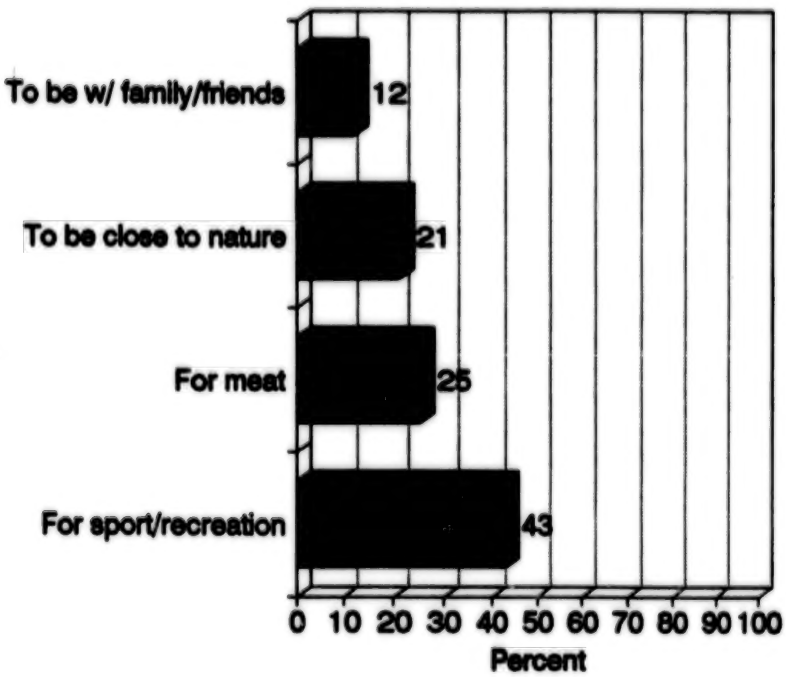

Figure 6. Active hunters were asked, "What was your main reason for hunting in the past two years?" (n=376)(Phase IV)

Forty-three percent of hunters hunt for the sport and recreation, 25% hunt primarily for the meat, 21% hunt to be close to nature and 12% hunt to be with friends and family (Phase IVa).

In the past 15 years, the percentages of hunters hunting primarily for the sport and recreation, or to be with friends and family have remained relatively stable. The percentage of hunters hunting primarily to obtain meat has decreased while the percentage of hunters hunting to be close to nature has increased (Phase IVa).

- **Hunters derive multiple satisfactions from hunting.**

Hunters derive many different types of satisfaction from hunting, including being close to nature, camaraderie, using special equipment, exercising, bagging game, developing skills, and planning and remembering the hunt. Developed by John Hendee, the multiple satisfactions approach has direct and important implications to wildlife managers: game bagged and days afield are important, but other aspects of the hunt should be managed as well to ensure and increase hunter satisfaction. Hendee's work suggests that the quality of a hunting experience and hunting satisfaction are dependent upon the extent to which a hunter finds the desired mix of satisfactions he is seeking from the sport (Hendee 1974)(Phase I).

- **For many hunters, motivations change throughout their hunting career.**

  Everybody has stopped some form of hunting at some time in their life, a method that doesn't hold a kick today. I quit shooting a rifle about 10 years ago. I went to a bow and arrow because I find that more challenging. You may change species or methods, but the thrill of hunting remains, you just attack it through a different form. (Hunter, AZ)

Bryan's "specialization theory" contends that recreationists move

from activities of low specialization to high specialization. Overall, it appears recreationists go through careers in their sport, with the earliest stages typified by less specific demands on the resource and the later stages typified by more specific demands. For example, in the early stages, any game, such as small game, may suffice, whereas later only spring turkey hunting will suffice, or a hunter may begin using a shotgun and move toward rifle and ultimately bow and arrow. Overall, Bryan notes that it appears newcomers to a recreational activity such as hunting, fishing and wildlife viewing are intent on getting results from the activity, such as catching a fish or harvesting a buck. Numbers become important as an activity becomes an established behavior, such as catching several fish or harvesting several birds. Once the numbers stage has been reached, specialization begins. At the extreme end of specialization, the activity itself becomes important for its own sake (Bryan 1979).

- **Seeing game and the possibility of harvest are more important than killing game to most hunters.**

Most studies indicate that killing game is not as important to hunter satisfaction as many other aspects of the hunt, including the beauty of the area and the possibility of seeing game (Phase I).

- **Some of the most important values surrounding hunting are those centered on the family.**

Values centered on the family are integral to all aspects of hunting, including initiation, frequency, satisfaction, desertion and re-entry (Phases I and II).

The value of hunting as a traditional family activity or as a way of furthering social bonds was a major feature of Phase II. Repeatedly, focus group participants expressed the satisfaction of hunting within the context of family issues:

I went (hunting) with my dad and uncles. When I moved, I couldn't wait to go hunting with my dad. He is almost 84

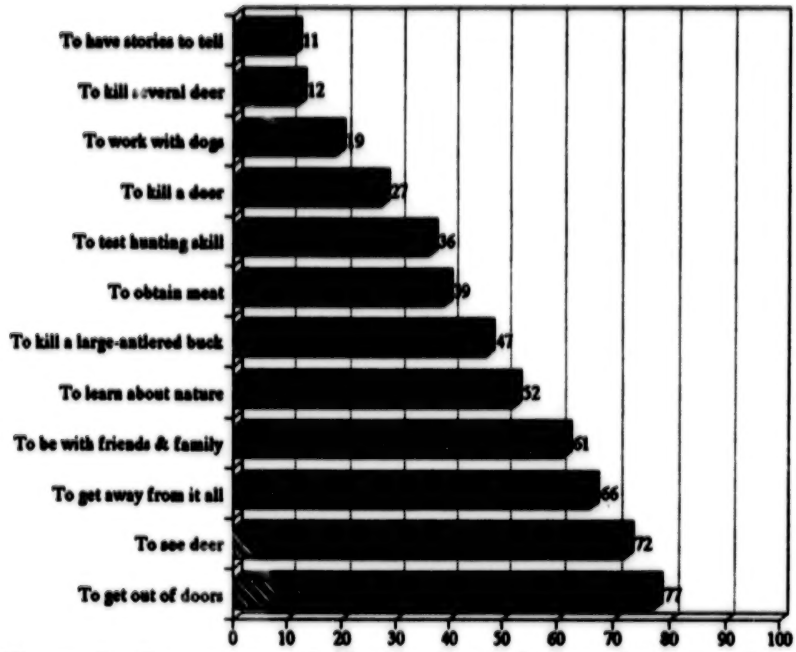

Figure 7. Percentage of Florida licensed deer hunters who reported each reason as a very important reason to them personally for hunting deer (n=2301)(Duda and Young 1992)

years old and he still has dogs and hunts ducks. We enjoy being together. (Ex-Hunter, CA)

(When I went hunting as a child I could) socialize with adults when they (were) relaxed. They (were) in a more child-like state themselves. (Ex-Hunter, PA)

Some of the best times of my life were hunting with my father. (Ex-Hunter, PA)

(Hunting) has been in the family for many years. It's something dad and I can do together. (Ex-Hunter, PA)

(Hunting) is handed down. It has to do with how you are raised. A lot of people are scared of guns. My father didn't hunt, but he taught me about guns. (Hunter, PA)

When I was 13 my father took me hunting. He and I don't have the greatest relationship in the world (but) when we

(were) hunting we (had) more of a bonding. (Non-Hunter, NH)

(Hunting is a) social thing or a rite of passage, traditions (are) handed down. When you were old enough they handed you a rifle and said "Go prove yourself." (Ex-Hunter, NH)

(Hunting) is an annual thing. My brothers and I take our sons. Last year I took my son for the first time. We have 10 or 15 people in camp. It's a great experience. My son could write a book about it, that's the great part. (Hunter, AZ)

(Hunting) has to do with being out with the men. It's a throw back in our nature when we had to hunt for food although we don't need it for food now-a-days. We do it because it takes us back to where we were, that challenge, that camaraderie, the challenge of living off the land. We only get to do that for a few days out of the year now. (Hunter, AZ)

(Hunting was) sitting around in the woods and talking. (There is) the success of following something until you could kill it, (but) it was the social aspect. (Ex-Hunter, AZ)

Fishing Satisfaction

"The most unique aspect of fishing is that it is a sport in which camaraderie flourishes. Participants have time to be together without telephones and televisions away from it all in the great outdoors. While there can be a competitive edge to fishing, it's not a pervasive part of the sport. Fishing is recognized as something that's done by families and/or friends who want to spend some time together"

- Harrington Market Research (1992:6-7)

"It's eally relaxing. I like getting up early in the morning. One night I went to Pritchard Creek on the Eastern Shore. We stayed all night, slept down there and the most beautiful thing I've

ever seen was the sun coming up."
- Active angler focus group participant, Virginia

- **Fishing satisfaction is high among U.S. anglers. Almost all active anglers are either very or somewhat satisfied with their fishing experiences.**

Active anglers were asked, "Overall, how satisfied were you with your fishing experiences over the past 2 years?" Thirty-eight percent were very satisfied, 41% were somewhat satisfied, 2% were neither satisfied nor dissatisfied or did not know, 12% were somewhat dissatisfied and 7% were very dissatisfied (Phase IVa).

- **Active anglers are satisfied with their state fish and wildlife**

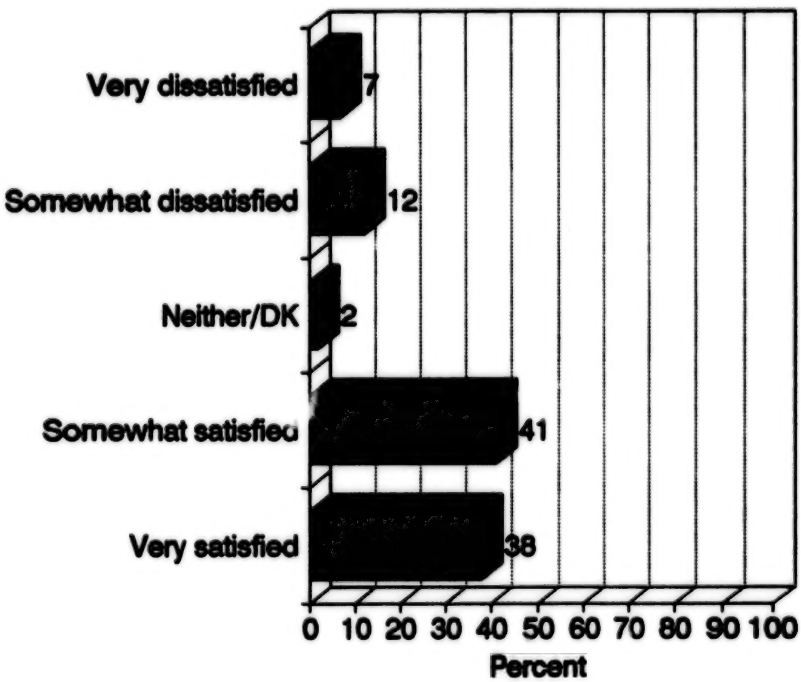

Figure 8. Active anglers were asked, "In the past two years, how satisfied were you with your fishing experiences?" (n=942)(Phase IV)

agency's efforts to provide fishing opportunities.

Twenty-seven percent rated the agency as excellent, 46% stated good, 18% stated fair, 4% said poor while 6% did not know or had no opinion of their state fish and wildlife agency's efforts to provide fishing opportunities (Phase IVa).

- **Anglers fish for a variety of reasons. Most anglers fish for relaxation. Fishing to catch large fish is the primary reason for fishing for only 3% of active anglers.**

Among active anglers, 33% fish primarily for relaxation. Twenty-five percent fish to be with family and friends, 18% fish for the sport, 13% fish primarily to catch fresh fish, 7% fish to be close to nature, and 3% fish to catch large fish (Phase IVa).

It's nice to just go out there. A lot of times you just go fishing

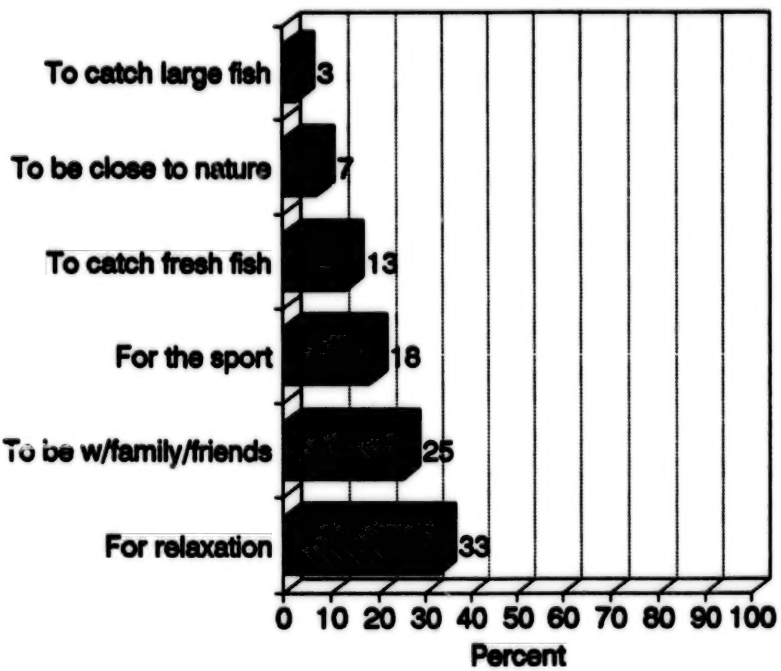

Figure 9. Active anglers were asked, "What was your main reason for fishing in the past two years?" (n=942)(Phase IV)

> *because it's so quiet. You go just to relax. It's nice.* (Angler, WA) (Phase III)

Among active anglers, the percentages that fish for the primary purpose of relaxing, or to be with friends and family have increased. The percentage of anglers that fish for the primary purpose of catching fresh fish, and the percentage that fish to catch large fish have decreased. The percentages of anglers that fish for the sport or to be close to nature have remained relatively stable (Phase IVa).

- **For many anglers, motivations change throughout their fishing career.**

Bryan (1979) also developed a categorization for anglers. Beginning participants are occasional anglers. Occasional anglers fish infrequently. They are new to the sport and fishing has not become a major interest. The second category, the generalist angler, has moved beyond the occasionalist stage and established fishing as a regular part of their activities. Generalist anglers use a variety of fishing techniques, and the third group are technique specialists. These anglers specialize in specific methods of fishing, largely to the exclusion of other techniques. Overall, Bryan (1979:44-46) concluded: "Fisherman tend to go through a predictable syndrome of angling experiences, usually moving into more specialized stages over time. But increasing specialization does not necessarily imply narrowing or restriction of activities outside the specialty. Instead, an ever increasing commitment to the sport in general may be found. The more specialized fisherman tend to have high knowledge and commitment to a variety of angling pursuits as an outgrowth of high time and skill commitment to the sport generally" (Phase I).

- **The most important values surrounding fishing are naturalistic and those values centered on the family. A major benefit of fishing is having undivided time and attention with their children.**

Fishing is a part of a broad and complex social environment, especially related to family relationships. Fishing does not stand alone as a recreational activity which can be explained independent of other factors. Anglers in the United States value the experience of being outdoors and being with friends and family above all other factors. While it appears that naturalistic values are of greater importance in terms of proximal satisfactions, it is difficult to separate the two issues with any certainty (Phase III).

I'd say spending time with your children, family and parents (are the most important reasons for fishing). Because I mean, the memories that I have when I was a kid...I sit back at home when I am not fishing and daydream about all the memories in my head. You'll have that for the rest of your life. You can go back and have those special memories for your whole life. (Angler, MT)

My kids get to see a lot of wildlife, bears and stuff. Lots of kids never get to see wildlife, never get out of town. (Angler, MT)

There's a whole list of (reasons for fishing), but getting out in nature in a nice place is probably the most important. (Ex-Angler, WA)

I take a couple of girlfriends after work and have a lot of fun... We may not even talk to each other for a half hour or so. We just stand up there staring or thinking, or remembering different things. It's relaxing, we call it bonding. (Angler, FL)

I'm a real estate agent. It's pretty busy. I'm around buildings, houses, everything else. I'm around people. I get out there (fishing) and try to get to the most secluded spot. Just get out there in the trees. I go out with friends a lot of times if I can. (Angler, FL)

- **Other factors of importance are the utilitarian value of catching fish and the skill of learning how to fish. These issues are secondary to socialization and naturalistic values. These factors should only be considered in relation to socialization and naturalistic values.**

Catching fish and skill development are important values, but it is important to keep them in the proper perspective (Phase III).

I don't know if it makes a difference in the amount of fish (I catch). (Angler, MT)

I'm looking for something to eat. I'm not a purist, catch and release, stuff like that. (Ex-Angler, WA)

Improving my fishing skills would be important. Just knowing that it would get easier. The more fishing I used to do, the more I knew about it. (Ex-Angler, WA)

Catching fish is important, but I'd only want to do it in a clean place. (Ex-Angler, WA)

Catching fish is really not important. I enjoy going to fish to fish. I have sat in the boat all day and caught nothing and have enjoyed it just as much as when I have caught a bunch of garbage fish or had some and lost them. I enjoy going out and sitting in a boat with my husband and fishing and being with him all day because that is our quiet time together. (Angler, FL)

I don't like going out unless I think I'm going to catch one. I prefer to catch fish. Going after the big one is fun. You can talk about it to your friends. (Angler, FL)

I would like to catch a big one... When that drag goes and it starts screaming, it has everyone up and down the pier seeing what is going on. It is an excellent feeling to catch a big fish, it makes a better story too... I would rather go and catch fish instead of just catching 1 big one. (Angler, FL)

I like to fish when the fish are biting. I like to catch fish. It's more fun for me to catch fish. I can't sit there all day long when nothing happens. I also like to cook the fish we catch and if we don't catch any, then I'll have to figure out something else to cook. (Ex-Angler, FL)

- **Neither the number of fish caught nor the size of fish caught are significant factors for a majority of anglers in fishing satisfaction.**

The number of fish caught and size of fish caught are important to some segments of the angler population. However, we found no evidence that catch rates or size of fish explain initiation, retention, drop-out, recruitment or significant long-term satisfaction rates (Phases I and III).

Hunting Dissatisfactions and Desertion

"I probably wouldn't hunt again. I hunted with my father--it was special--he's gone so I wouldn't hunt again."

- Ex-Hunter focus group participant, California

"How far down is hunting on my list of priorities? Even if I had the time I might not go. Maybe if my father asked me, but not otherwise."

- Ex-Hunter focus group participant, New Hampshire

"Research has shown that dissatisfactions, experiences that directly cause cessation of hunting activity, are often the result of encountering what is perceived to be unethical, illegal, or unsafe behaviors of other hunters."

- Decker et al. (1992:6)

"Landowner discontent is not with hunting, but rather with the hunter...because of hunter misconduct centering on trespass."

- Ruff and Isaac (1987:493)

- **Not enough access, not enough places to hunt, work obligations, poor behavior of other hunters and too many hunters in the field were the five issues that took away most from hunting satisfaction among most active hunters.**

It is important to note, however, that the potential dissatisfaction cited most frequently by active hunters as having "strongly taken

away from enjoyment of hunting" was expressed by only 22% of the active hunters, further indication of overall hunter satisfaction in the U.S. (Phase IVa). Problems with access appear to be self-induced by some hunters. A complaint from landowners, and a reason for posting land or limiting access, is poor hunter behavior (Phase I).

- **Although important issues for a minority of active hunters, the following are not taking away strongly from active hunters' enjoyment of hunting to any significant degree[2]:**
  - Mandatory hunter education[3]
  - The feeling of causing pain to animals
  - Harassment from anti-hunters in the field
  - Finding a place to buy hunting licenses
  - The perception that hunting endangers animal populations
  - Not having anyone to go with
  - Family obligations
  - Personal health
  - Having to travel in order to hunt
  - Other people's negative opinions toward them as a hunter
  - Restrictive bag limits or season lengths
  - Not having enough trophy animals to hunt
  - Frequent changes in regulations
  - Not enough law enforcement officers where they hunt
  - Complex regulations (Phase IVa)

- **The top five issues that strongly influenced inactive hunters not to hunt were amount of free time, lost interest, work obligations, family obligations and the perception of causing pain to animals.**

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[2] Each listed potential dissatisfaction received at most 8% of the active hunters citing the item.

[3] This study did not assess the impacts of mandatory hunter education to recruitment, only to satisfaction.

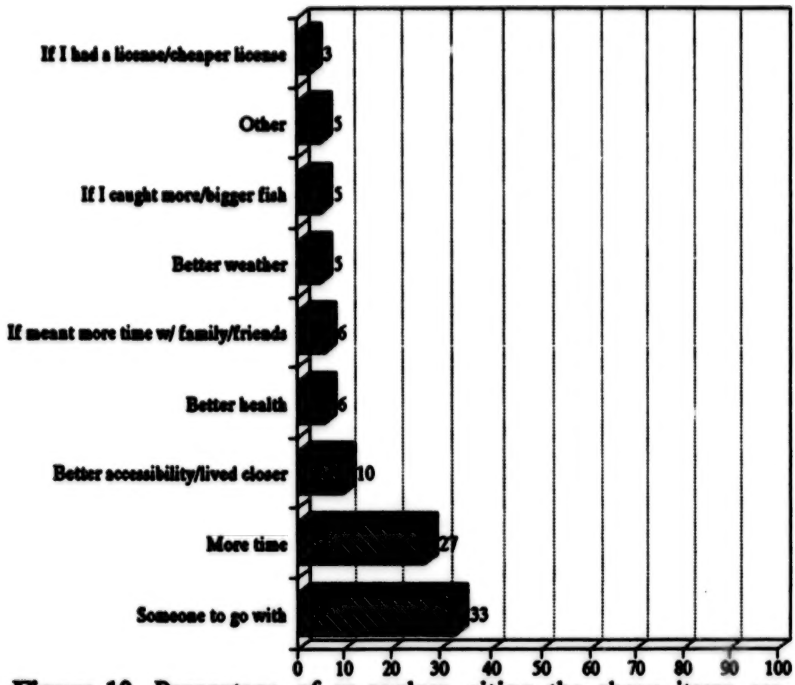

Figure 10. Percentage of ex-anglers citing the above items are what they need to start fishing again (n=375)(Harrington Market Research 1990)

However, it must be noted that the potential dissatisfaction cited most frequently by inactive hunters as having "strongly influenced their decision not to hunt as much or at all" was expressed by 26% of the inactive hunters (Phase IVa).

- **Although important issues for a minority of inactive hunters, the following do not strongly influence hunters to hunt less or to cease hunting to any significant degree[4]:**
  Harassment from anti-hunters in the field
  Not enough trophy game

[4] Each listed potential dissatisfaction received at most 8% of the inactive hunters citing the item.

Mandatory hunter education[5]
Restrictive bag limits or season lengths
Other people's negative opinions toward them as a hunter
Frequent changes in regulations
Complex regulations
Not having enough game animals to hunt in general
The cost of hunting equipment
The cost of hunting licenses
Not enough law enforcement officers where they hunted
Pollution or litter where they hunted
Having to travel in order to hunt
The perception that hunting is endangering animal populations (Phase IVa)

- **Antihunting sentiment is not impacting hunting participation in the U.S.**

There was no compelling evidence that antihunting activities or sentiments were having an impact on hunting initiation, continuation or desertion (Phases I, II and IVa).

- **A major reason hunters quit hunting is because of a breakdown in the social support system among hunters.**

Most current, active hunters continue to surround themselves socially with other active hunters. This is in sharp contrast to ex-hunters who have "fallen out" of a social circle of hunters.

Hunters hunt with other hunters. As hunting partners move away, pass away, or become involved with other activities, participation by others in the group declines as well. This also happens when an avid hunter moves to a new area. Hunting activity often does not resume because the hunter does not have the social support system he used to have (Phase II). This suggests values in the

[5] This study did not assess the impacts of mandatory hunter education to recruitment, only to satisfaction.

familial and social context have become greater than other values derived from hunting.

Familial and social constraints are important considerations when developing programs to maintain participation in hunting. Without a strong social support system in place, efforts to recruit new hunters, especially individuals who do not come from traditional hunting families, will not be effective.

> *How far down is hunting on my list of priorities? Even if I had the time I might not go. Maybe if my father asked me, but not otherwise (Ex-Hunter, NH).*
>
> *I just don't have the time (to hunt). My brother belongs to a club, he invites me, but I (won't) have the time until I retire. (Ex-Hunter, CA)*
>
> *I hunted because the guys I ran with hunted and I just went with them. When they moved or got divorced I didn't have anyone to go with, so I stopped. (Ex-Hunter, AZ)*
>
> *I knew what everybody I was hunting with would do. I moved and I haven't wanted to learn that over again. (Ex-Hunter, PA)*
>
> *The guys I ran with all moved away. Twenty years ago when I was working hard, hunting was an all-male activity and a way to get away, but I don't have the time anymore. I just got out of the habit. I was trying to keep a business going and I had 2 kids I was doing things with. (Ex-Hunter, AZ)*
>
> *I've hunted with my brothers all my life. They're all gone, except the littlest one--things change. (Ex-Hunter, PA)*

Ex-hunters' motivations were similar to active hunters in many respects. They shared utilitarian, naturalistic, dominionistic, aesthetic and ecologistic values. However, using an economic metaphor, active hunters were more elastic in their expectations about hunting, i.e., they derived multiple satisfactions. Active hunters could easily substitute one value for another, or derive satisfactions from a wider range of values than ex-hunters. Those hunters whose satisfaction stemmed primarily from one value

tended to become ex-hunters more often than hunters who derived satisfactions from multiple values. Ex-hunters were often inelastic in their expectations about hunting.

- **Safety was an important concern for many ex-hunters, nonhunters and to an extent, active hunters.**

Safety combined with the perceived carelessness among many hunters make a powerful deterrent to ex-hunters and non-hunters (Phases I and II).

Fishing Dissatisfactions and Desertion

"In the three years in which this study has been implemented, no substantial negatives about fishing have been found. The only 'negative' seems to be that anglers don't have enough time to fish more often... Concerns about there not being enough fish to catch were...at relatively low levels. It is estimated that, at most, 4% of...anglers regard this as a fishing problem."

- Harrington Market Research (1992:17)

"In summary, declines in angling activity are not due to reductions in adults of the right age for fishing. Any declines appear to be the result of a lack of some combination of time and interest in the sport rather than drawbacks to fishing."

- Harrington Market Research (1990:22)

"I go fishing for the good times and the company. When I have a couple of days, I go fishing with my kids...or the people I work with. It's nice if you catch fish, but I always have a good time even if I don't."

- Active angler focus group participant, Florida

"Catching fish is important, but I'd only want to do it in a

clean place."

- Ex-angler focus group participant, Washington

- **The three issues that took away most from fishing satisfaction among active anglers were pollution or litter, work obligations, and interference from people doing other recreational activities where they fish.**

However, it is important to note that the potential dissatisfaction cited most frequently by active anglers as having "strongly took away from enjoyment of fishing" was expressed by only 19% of active anglers (Phase IVa).

- **Although important issues for a minority of active anglers, the following are not taking away strongly from active anglers' enjoyment of fishing to any significant degree[6]:**
  - Finding a place to buy fishing licenses
  - Strictness of law enforcement officers where they fish
  - Personal health
  - Complex regulations
  - Cost of fishing equipment
  - Restrictive creel limits or season lengths
  - The perception that fishing is endangering fish populations
  - Frequent changes in regulations
  - Having to travel in order to fish
  - Not enough law enforcement officers where they fish
  - Cost of fishing licenses
  - Not having enough trophy fish to catch
  - Too many fishermen where they fish
  - Poor behavior of other fishermen
  - Not having anyone to go with

Overall, no major negatives were found surrounding fishing (Phases III and IVa).

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[6] Each listed potential dissatisfaction received at most 8% of the active anglers citing the item.

- **The top five issues that strongly influenced inactive anglers not to fish were amount of free time, lost interest, family obligations, work obligations, and not having anyone to go with.**

Interestingly, the six dissatisfactions noted most frequently as strongly influencing anglers' decision not to fish were not resource-based issues, but were based on social or economic variables. It should be pointed out that the potential dissatisfaction cited most frequently by inactive anglers as having "strongly influenced the decision not to fish" was expressed by 30% of inactive anglers (Phase IVa).

- **Although important issues for a minority of inactive anglers, the following are not strongly influencing anglers' decision not to fish[7]:**
  - Strictness of law enforcement officers where they fish
  - Restrictive creel limits or season lengths
  - Finding a place to buy fishing licenses
  - Frequent changes in regulations
  - Not having enough trophy fish to catch
  - Not enough law enforcement officers where they fish
  - Complex regulations
  - Too many fishermen where they fish
  - Poor behavior of other fishermen
  - Cost of fishing equipment
  - Not having enough game fish to catch
  - Cost of fishing licenses
  - Interference from people doing other recreational activities where they fish
  - The perception that fishing is endangering fish populations
  - Not having enough places to fish
  - Not having enough access to places to fish

[7] Each listed potential dissatisfaction received at most 8% of the inactive anglers citing the item.

Chapter III • Implications & Recommendations

This project comprises the most exhaustive review, data collection and analysis of any study of hunting and fishing to date. While there are numerous important and salient individual points herein, one factor is made most evident. Hunting, and to a slightly lesser extent fishing, are primarily activities which can be best understood as sociological phenomenon centered on and about the American family.

While biological considerations are of importance as well, this study suggests that traditional fisheries and wildlife management programs, which focus on the resource and treat the legal hunter and angler as a secondary factor, will not promote continued utilization, but may contribute to the decline in participation and reduced satisfactions.

- **Family issues and family values play a critical role in hunting and fishing initiation, satisfaction and desertion.**

To a large extent, hunting and fishing represents the embodiment of family values. Hunting and fishing initiation almost always occurs within the context of family, and some of the greatest satisfactions are derived from the family relationships while participating in these activities. Any promotional or recruitment

campaign for hunting and fishing must incorporate "family values" as hunting and fishing's "unique selling point," known to marketers as a product's USP. Fish and wildlife agencies should develop family-type licenses and manage hunters and anglers as social units rather than individual hunters or anglers. Fish and wildlife agencies must manage for family involvement. Agencies must interject the possibility of families hunting and fishing together, including the extended family and including close friends, whenever and wherever possible. Often times hunters hunt and anglers fish to be with friends and family. If this social aspect of hunting and fishing is not fulfilled, there is a likelihood participation will cease. This is an important aspect of hunter and angler management and cannot be stressed enough. Parent-child licenses, family licenses, areas designed for younger hunters and anglers, and special youth hunts and angling experiences are some ways to fulfill this need.

- **The major factors affecting hunting and fishing participation in the U.S. are broad demographic and social changes, such as urbanization, an aging population, and the changing role of women in society.**

- **Use the term legal hunting and legal fishing.**

Many individuals still believe hunting endangers wildlife populations. Also, many people do not seem to differentiate between legal and illegal hunting when expressing opinions on hunting. This is less of an issue with fishing.

- **Overall state fish and wildlife agencies are doing an excellent job providing hunting and fishing opportunities to hunters and anglers.**

U.S. hunters and anglers are very satisfied with their hunting and fishing experiences and are very satisfied with state fish and wildlife agencies efforts to provide hunting and fishing opportunities.

- **Public attitudes toward and opinion on hunting are being damaged from the "inside out" rather than from the "outside in."**

Hunting from the outside looking in: The level of antihunting sentiment in the U.S. is minimal and is having little impact on hunter recruitment, satisfaction, retention or desertion. Furthermore, the public supports legal hunting and feels that hunting should remain legal.

Hunting from the inside looking out: Damage is being done to hunting as an activity from poor hunter behavior. Efforts to enhance public perceptions and attitudes toward hunting must begin with hunter behavior.

Efforts toward improving hunter behavior will go far in increasing positive public attitudes toward hunting. Moreover, improvements in hunter behavior should help to minimize hunters' primary dissatisfaction: not enough access. The main reason landowners limit access is because of poor hunter behavior.

Poor and unethical hunter behavior is a principal source of dissatisfaction among hunters. Programs must be developed to curb unethical hunting. From a monetary perspective, every dollar spent on programs to reduce unethical hunting is a dollar spent to increase hunter satisfaction and increase public support of hunting. We strongly suggest that additional hunter education and some type of mandatory refresher courses be looked at.

- **Fish and wildlife agencies must manage for multiple satisfactions.**

Multiple satisfactions are a very real and important aspect of managing for hunter satisfaction. Although harvest is important, it is not the only aspect of hunting that is important. Agencies must manage for all aspects of the hunt to enhance hunter satisfaction -- from keeping wildlife management areas as

aesthetically appealing as possible, to considering family issues whenever decisions are made that affect hunters, to publicizing game recipes.

- **Managing for multiple satisfactions not only enhances hunter satisfaction but appears to lessen the likelihood of hunter desertion.**

If a hunter derives multiple satisfactions from hunting, and one element of the hunt is dissatisfactory, other elements may help to maintain the hunter's interest and satisfaction with the total hunting experience.

- **Efforts to maintain hunting participation among U.S. hunters should focus on hunter retention, not hunter recruitment.**

Retaining hunters is more cost-effective than attempting to recruit new hunters. Based on their extensive research, Applegate et al. (1984:67) recommend that "Efforts to reduce juvenile mortality; that is, the number of newly recruited hunters who drop out, would be more profitable than efforts to recruit new hunters to sustain a state's hunter population. As hunter retention increases, the number of new recruits should show a corresponding increase, since recruitment is a relatively constant percentage of the active hunter population."

- **Efforts to recruit new hunters outside of the traditional hunting community will be difficult, if not impossible.**

A long-term commitment to hunting is the result of the presence of, and frequent exposure to, hunting as a child. It takes a hunter to make a hunter. Most hunter recruitment only takes place in this environment and any effort to recruit new hunters must aim to duplicate these conditions. There is little evidence that hunter recruitment outside of the white rural male community will be successful. Certainly fish and wildlife agencies should meet the

demand for the increased number of female hunters and small increases in minority interest in hunting. However, there is an important difference between meeting this demand and attempting to create a new demand. The success of women hunting programs nationwide is meeting a demand, not creating a demand. Additionally, hunter recruitment efforts must be weighed in light of four of the top five dissatisfactions among active hunters -- not enough access, not enough places to hunt, poor behavior of other hunters and too many other hunters in the field. More hunters would undoubtedly exacerbate these problems.

- **Fish and wildlife agencies should develop hunter education programs targeted to different groups, taking into account each groups specific needs.**

Extensive research on hunter education at Cornell University suggests that at a minimum students should be separated into two groups -- those initiated at a young age by parents or close relatives and those initiated at an older age by peers.

- **Fish and wildlife agencies should manage for a range of hunting opportunities.**

Some wildlife management areas or seasons should be managed exclusively for trophy hunting. Other areas should be managed primarily for the largest possible herd, while other areas or seasons can be managed primarily for the naturalistic/wilderness qualities. There are markets for each of these hunting experiences. Matching target groups to preferred hunting opportunities will enhance hunter satisfaction among hunters. The challenge this will create will be an increase in the complexity of regulations. Enhanced communications will be vital to communicate to hunters 1) why this strategy was initiated, 2) the featured hunting opportunity of each site or season, and 3) the specific regulations for each site or season in a clear and concise manner. A perceived increase in complexity of regulations can be actively countered with effective communications programs to hunters.

- **Hunting regulations should be developed to maximize the possibility for hunters to see game, not to maximize harvest.**

- **Fish and wildlife agencies must manage for multiple satisfactions for fishing.**

Catching fish is important, however, being with friends and family, relaxing, and experiencing the natural environment are also critical aspects of the angling experience.

- **As with managing for multiple satisfactions with hunting, a clearly defined spectrum of angling experiences needs to be offered and communicated to anglers.**

By offering a variety of angling experiences, some anglers may complain that regulations are too complicated. However, we believe this can be overcome by enhancing and increasing communications with anglers. A toll-free telephone number could be used to help explain regulations by knowledgeable individuals to reduce angler anxiety about not understanding regulations. Another solution would be to have certain "classes" of waters, each with similar regulations. For example, a class A water may be managed for trophy angling with a set of rules, while a class B water may be managed for maximum harvest and would have another set of regulations.

- **Programs designed to interest children in fishing should include catching fish, or at least offer a high chance of catching fish.**

Children need to catch fish at first to get them "hooked." Once the interest is there, interest in other aspects of the fishing experience develop and should be encouraged to ensure continuation.

- **The aesthetics of angling sites and fishing in nonpolluted waters are important to anglers.**

Any attempt to make fishing areas more attractive through active litter pickup and garbage removal will enhance overall satisfaction levels.

Water quality management and improvement should be considered another fisheries management technique that increases angler satisfaction. As important is the perception of the cleanliness of the water. Continued efforts at communicating to the angling public on the cleanliness of certain bodies of waters, the pollution of others, as well as the health risks of eating fish from certain bodies of water is essential.

- **It is clear that individuals who have fished for a long time and those that belong to sportsmen's clubs have different preferences than less avid anglers.**

Advanced anglers and members of sportsmen's clubs tend to be more involved in setting fisheries policy and voicing their opinions. It is important for fish and wildlife agencies to keep guard of only hearing advanced, avid anglers' opinions on regulations and angling preferences. For example, fishing tournaments and derbies are important to only a small segment of the angling population. These individuals tend to focus on the catch, especially large fish. However, catching large fish is not the most important reason for fishing for the majority of anglers.

- **Lack of time is an important reason people do not fish as much as they would like to or as much as they used to.**

There are few negatives associated with fishing. Advertising campaigns on the familial rewards of fishing, and how fishing is exciting and fun may be necessary to keep angling in front of the public's eye.

- **The social aspects of fishing, especially the bonding of children with parents or grandparents, are important to angling satisfaction.**

This satisfaction should be promoted in all literature regarding fishing.

- **The social aspects of fishing are also important when developing programs to bring ex-anglers back into the fishing ranks.**

"No one to go fishing with" was cited frequently by ex-anglers as a reason why they have stopped fishing. More fish or bigger fish was not frequently cited. Mentor programs, programs to take ex-anglers fishing by rod and gun clubs, and "buddy" programs could help bring back ex-anglers. Mentor programs should be considered carefully in light of child safety and comfort. For children, mentors need to be someone known and trusted by parents. Mentor programs for children that consist of strangers will not succeed.

- **Fishery program planning should begin to develop and use a typology of anglers.**

A typology of anglers, for example trophy, nature, familial, fresh-fish, and subsistence, should be used when developing programs. Regulations can be evaluated and programs can be developed based on their impact on each group. The key to managing for angler satisfaction is to match the desired fishing experience with that particular fishing opportunity. Although it will take extensive planning, this must be done.

- **The cost of a fishing license is rarely a negative value for active or inactive anglers.**

There is a general discomfort with the rising costs of fishing, but moderate increases in fishing fees, done with disclosure, information campaigns and equity are acceptable. License fee increases may explain short-term decreases in fishing participation, but do not appear to be impacting long-term trends.

Literature Cited

Applegate, J. E., J. R. Lyons and P. J. Plage. 1984. Analysis of the 1980 national survey of fishing, hunting, and wildlife-associated recreation. Report no. 2. Dynamic aspects of the sport hunting population. U.S. Dep. of Interior, Fish and Wildl. Serv., Washington, DC. 151pp.

Bryan, H. 1979. Conflict in the great outdoors: toward understanding and managing for diverse sportmen preferences. Univ. of Ala., Bur. Public Adm., Sociological Stud. Ser. 4, Tuscaloosa. 98pp.

Decker, D. J., J. W. Enck and J. P. O'Pezio. 1992. What makes New York's deer hunters tick? The Conservationist 47(1):40-43.

Hammitt, W. E., C. D. McDonald and M. E. Patterson. 1990. Determinants of multiple satisfaction for deer hunting. Wildl. Soc. Bull. 18:331-337.

Harrington Market Research. 1991. Fishing motivation study - wave II, executive review of national phone survey. Prepared for Am. Fishing Tackle Manufacturers Assoc., Barrington, Ill. 56pp.

Harrington Market Research. 1992. Fishing motivation study - wave III, executive review of national phone survey.

Prepared for Am. Fishing Tackle Manufacturers Assoc., Barrington, Ill. 28pp.

Hendee, J. C. 1974. A multiple-satisfaction approach to game management. Wildl. Soc. Bull. 2:104-113.

O'Leary, J. T., J. Behrens-Tepper, F. A. McGuire and F. D. Dottavio. 1987. Age of first hunting experience: results from a nationwide recreation survey. Leisure Sci. 9:225-233.

Rohlfing, A. H. 1978. Hunter conduct and public attitudes. Trans. North Am. Wildl. and Nat. Resour. Conf. 43:404-411.

Ruff, R. L. and T. A. Isaac. 1987. Public access and fee hunting on private nonindustrial forests in Wisconsin. Trans. North Am. Wildl. and Nat. Resour. Conf. 52:483-495.

Appendix A • Methodology

Phase I: Literature Review

A comprehensive literature review was conducted, and consisted of an in-depth examination of over 700 previous works on participation in hunting and fishing, hunting and fishing recruitment and desertion, hunting and fishing satisfaction, factors influencing hunting and fishing participation, and social and demographic trends. Many other subjects regarding hunting and fishing were examined as well.

These studies were reviewed and compiled into the literature review report. Many sources were examined, including the *Journal of Wildlife Management, Wildlife Society Bulletin, Transactions of the North American Wildlife and Natural Resources Conference, Journal of Leisure Research*, proceedings from annual meetings of the regional associations of fish and wildlife agencies, dissertations, research reports produced by state fish and wildlife agencies, the U.S. Fish and Wildlife Service, and private market research firms. This literature review on hunting and fishing participation is one of the most comprehensive ever conducted on the subject. Findings from the literature review are cited in this report followed by (Phase I) to refer the reader to the Phase I report.

Phase II and III: Qualitative Analysis

Thirteen focus groups were conducted to develop an understanding of the perceptions, motivations and factors influencing hunting and fishing recruitment, participation and desertion.

Focus groups contain 10-12 people recruited to represent hunters, nonhunters, ex-hunters, anglers and ex-anglers to provide new insights, new hypotheses and understanding through the interaction process. The use of focus groups is an accepted research technique for qualitative explorations of attitudes, motivations and behavioral predispositions and practices.

Focus groups are group depth interviews in that a small group of participants is interviewed at length about a single subject. Focus groups are widely used in market research and political science, especially applied politics, for exposing attitudes, values, and responses to policy issues. The technique has been used by several state fish and wildlife agencies to uncover public opinion and attitudes toward a variety of fish and wildlife management-related topics.

The method of conducting a focus group used in this study was to have a moderator conduct a two-hour discussion on hunting or fishing participation. The role of the moderator was to keep the discussion within design parameters, but not to exert a strong influence on the content of the discussion. In this sense, focus groups are non-directive group discussions and expose spontaneous attitudes of small groups. A market research firm at each location was contracted to recruit focus group participants based on specific criteria, make a suitable location available, pay cash incentives, and serve refreshments to participants and observers.

The focus groups were video and audio taped and observed unobtrusively through one-way mirrors. Analysis was based on firsthand observation, discussion with other observers and the moderator, comparison with independent analysis and repeated

reviewing of the discussion tapes. Focus groups were transcribed based on elements most salient to the study. Each focus group was then analyzed separately from the typed transcripts and review of the video tapes another time. The transcriptions can be found in the Phase II and Phase III reports.

Hunting Focus Groups

Participants in the hunting focus groups were selected based on their association with the issue of hunting participation. Specifically, hunters (referred to as "Hun" in this report), ex-hunters (referred to as "X-Hun in this report), and non-hunters (referred to as "N-Hun" in this report). Only one category of individuals were included in any one focus group. The following definitions were used: 1) a hunter is a person who purchased a hunting license and/or went hunting in the previous three years; 2) an ex-hunter is a person who purchased hunting licenses and/or hunted in the past, but has not purchased a hunting license or hunted in the previous three years; and, 3) a non-hunter is one who has not purchased a hunting license or hunted in the past. The participants were drawn from urban, suburban and rural populations. Other than recruiting participants who were 18 years of age or older, no effort was made to differentiate participants by age, gender, income or residence.

Individuals were invited to attend the focus group discussion based on verbal skills displayed during the telephone interview and their willingness to participate. To arrive at a focus group of 10 to 12 members, 15 people were offered $30.00 to $50.00 as an incentive to attend. The incentive rate was determined by local experience in focus group research.

Two of the focus groups were conducted in Scottsdale, Arizona (AZ), two in York, Pennsylvania (PA), two in Manchester, New Hampshire (NH) and two in San Francisco, California (CA). Two groups were conducted at each location, one drawn from one category of the public and the second from a different category. Findings from the hunting focus groups are cited in this report

followed by (Phase II) to refer the reader to the Phase II report.

Fishing Focus Groups

The selection of participants for the five fishing focus groups was based on participation in fishing recreation. Individuals were recruited by phone and consisted of active anglers and inactive anglers. Active and inactive anglers were defined based on frequency of license purchase and number of fishing trips taken. Among the inactive anglers interviewed, there were individuals with varying levels of avidity for fishing, including people who had only fished as children or had fished very casually once or twice.

One focus group of active anglers was conducted in Great Falls, Montana (MT), one focus group of active and inactive anglers was conducted in Seattle, Washington (WA), one focus group of active anglers and one focus group of inactive anglers were conducted in Tampa, Florida (FL), and one focus group of African-American active anglers was conducted in Richmond, Virginia (VA). The participants were drawn from urban, suburban and rural populations. Other than recruiting participants who were 18 years of age or older, no effort was made to differentiate participants by age, gender, income or residence. All but the African-American group in Richmond consisted of mixed ethnic backgrounds and all of the groups were mixed in terms of age, income and gender.

Participants were paid an incentive of $30 to $50 based on local market conditions. The fishing focus groups were video and audio taped, with the exception of the Richmond group which was only audio taped, and observed by the researchers through one-way mirrors. Findings from the fishing focus groups are cited in this report followed by (Phase III) to refer the reader to the Phase III report.

Phase IV: Quantitative Analysis

Telephone Survey

Results of the telephone survey are based upon a random-digit dialing (RDD) computer-assisted survey of U.S. residents, including Alaska and Hawaii, aged 18 or older. Telephones were selected as the preferred sampling medium since nearly all U.S. residents have access to a telephone. In addition, a central polling site allowed for rigorous quality control over the interviewers and data collection.

A random selection of telephone numbers and thereby households was purchased from Survey Sampling, Inc. (SSI) of Fairfield, Connecticut. This firm has patented computer programs that generate random numbers which are, in the opinion of most research professionals, of the highest quality. The approach used by SSI produces successful connections with random households 35% more often than other random digit sampling methods (SSI). Telephone numbers randomly generated in this fashion overcome bias against new listings and residents with unlisted telephone numbers. To overcome bias of those individuals most likely to answer the phone, questionnaire respondents were randomly selected from each household. The random selection procedure used within each household was the "last birthday" procedure. This means that when someone answered the phone, the interviewer asked to speak to the person over 18 that had the most recent birthday. This procedure was used because it is easy for the respondent to understand. Randomly-generated telephone numbers coupled with the "last birthday" method ensure that the survey results can be projected to the adult, resident population of the U.S. as a whole.

Active and inactive hunters and active and inactive anglers were screened from the general population. These individuals were asked additional questions about their hunting and/or fishing participation, satisfactions and dissatisfactions.

The survey questionnaire was developed cooperatively between Responsive Management, the U.S. Fish and Wildlife Service and several state fish and wildlife agencies. A pretest of the survey was conducted which consisted of 50 completed interviews. Based on the pretest, several revisions and clarifications were made to the survey. A total of 2085 surveys were completed with randomly-selected adult U.S. residents. Sub-groups of the general population included: active hunters (n=376), inactive hunters (n=351), active anglers (n=942) and inactive anglers (n=529).

Responsive Management (RM) maintains its own telephone interviewing facilities in-house. Thes facilities are staffed by interviewers with experience conducting computer-assisted telephone interviews on the subject of natural resources and outdoor recreation for state fish and wildlife agencies. A total of 24 different interviewers collected the data for this project. RM conducted the telephone interviews utilizing "Questionnaire Programming Language 3.0." Project supervisors randomly monitored the telephone workstations without the interviewers' knowledge to evaluate the performance of each interviewer.

RM has designed a telephone interviewing facility that stresses the importance of highly-trained telephone interviewers who work under the close supervision of RM professional staff. The project supervisor edits each completed survey to check for clarity, understanding, completeness, and form. To ensure the data collected is of the highest quality, the interviewers are trained according to the standards established by the Council of American Survey Research Organizations. Method of instruction includes lecture and role-playing. The project supervisor conducts project briefings with the interviewing crew prior to working on the specific project. Interviewers are instructed on the following: study goals and objectives, type of study, handling of survey questions, interview length, termination points and qualifiers for participation, reading of interviewer instructions, reading of survey, reviewing skip patterns, and probing and clarifying techniques necessary for specific questions on the survey

instrument.

Interviews were conducted Monday through Friday from 9:00 a.m. to 9:00 p.m. (local times) and on Saturday from 10:00 a.m. to 4:00 p.m. (local times). A five-callback design was used to maintain the representativeness of the sample, avoid bias toward people easy-to-reach by telephone and provide an equal opportunity for all to participate (in some instances, numbers were called up to eight times). Subsequent calls were placed at different times of the day and different days of the week. This intensive call-back procedure is a good technique for boosting response rates.

The software used for data collection was QPL version 3.0. QPL is a comprehensive system for computer-assisted telephone interviewing. The survey data is entered into the computer as the interview is being conducted, eliminating manual data entry after the completion of the interviews. The survey instrument is programmed so that QPL branches, codes, and substitutes phrases in the survey based upon previous responses to ensure the integrity and consistency of data collection.

Some response distributions in the text may not add to 100% exactly due to rounding, while a few questions allowed for multiple responses. Also, strongly and moderately statements may not add to the total reported because of rounding. Findings from the telephone survey are cited in this report followed by (Phase IVa) to refer the reader to the telephone survey portion of the Phase IV report.

Multivariate Analysis

The goal of the multivariate analysis was to identify the factors associated with changes in hunting and fishing participation between 1980 and 1990 using National Survey of Fishing, Hunting and Wildlife-Associated Recreation (NSFHWAR) interview screening data. Drs. Tom Heberlein and Elizabeth Thomson of the University of Wisconsin were contracted to conduct the multivariate analysis.

Screener data from the NSFHWAR was used to estimate participation rates which require random samples of nonparticipants as well as participants. Although changes in methodology (annual recall versus trimester recall) have taken place between the 1980 and 1990 NSFHWARs, the screener surveys continue to use annual recall for the key indicators of participation. Thus, data are comparable across surveys.

Sampling from Data Sets

The screening data sets (FH2) consisted of 340,032 (1980), 273,485 (1985), and 263,591 (1990) person records; the 1980 file included records for noninterviewed households, while the later two files did not.

A random-number generator was used to select a 3% simple random sample of records from each screening interview. Noninterviewed households (1980 only) were excluded in the analysis phase. Records for persons under age 16 were excluded after consistency checks had been conducted.

To determine the stability of sample estimates, a second 3% random sample was selected and estimates were compared for the hunting and fishing participation and socioeconomic variables across the three survey years. The estimates were extremely similar across the two independent samples. Standard errors would not be appreciably reduced (with resulting increases in statistical power) with a larger random sample.

The number of records sampled was 10,144 (1980), 8,069 (1985), and 7,839 (1990). When noninterviewed households were excluded, the 1980 records were reduced to 9,322. The number of persons 16 and older (analytic samples) was 7,508 (1980); 6,079 (1985); and 5,390 (1990).

Analysis Strategy

Exhaustive tests were constructed for interaction between effects

of socioeconomic variables across time and for differences between males and females. If effects of age, for example, differ across surveys, then straightforward predictions cannot be made of change in hunting and fishing participation from the pooled effect of age on hunting or fishing and changes in age across survey years. In most cases effects of independent variables were not different across survey year (i.e., did not interact with year of survey), a necessary basis for the summary multivariate analyses. Determinants of hunting and fishing participation vary by sex, so separate models were presented for males and females.

Ordinary least squares regression was used to predict hunting and fishing participation for the three survey years combined. Models included survey year (1985, 1990 contrasted to 1980), age, education, income, region of residence, marital status, race, and rural place of residence at 16 years of age. As noted above, and described in full in the Phase IVb report, the researchers were unable to include current rural/urban residence in the model because measures were not comparable across surveys.

Tables are presented in the Phase IVb report presenting the OLS understandardized regression coefficients (slope representing effect of each independent variable on participation) and the amount of change in each independent variable from 1980 to 1990. These two values are multiplied to estimate the 10-year effect of each independent variable, i.e., the amount of change in hunting or fishing that can be attributed to changes in the independent variable. Findings from the multiple regression analysis are cited in this report followed by (Phase IVb) to refer the reader to the Phase IV report.

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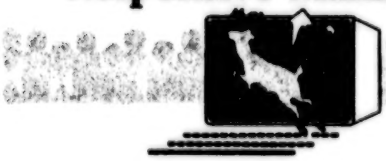
Responsive Management



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